

April 2001

# TENNESSEE VALLEY AUTHORITY

## Bond Ratings Based on Ties to the Federal Government and Other Nonfinancial Factors



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United States General Accounting Office  
Washington, DC 20548

April 30, 2001

The Honorable Bob Smith  
Chairman, Senate Committee on  
Environment and Public Works  
United States Senate

The Honorable Mitch McConnell  
United States Senate

This report responds to the remaining aspects of your request that we review several issues pertaining to the Tennessee Valley Authority's (TVA) financial condition in light of the increasing competition in electricity markets. On February 28, 2001, we issued a separate report on TVA's (1) progress in reducing debt and recovering the costs of deferred assets, (2) financial condition compared to its likely competitors, and (3) potential stranded costs.<sup>1</sup> As agreed with your offices, this report provides perspective on several matters pertaining to TVA's bond rating. Specifically, you asked us to determine (1) whether TVA's bonds are explicitly or implicitly guaranteed by the federal government, including the opinion of bond analysts regarding the effect of any such guarantee, and (2) the impact of TVA's bond rating on its annual interest expense.

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## Results in Brief

The TVA Act states that the federal government does not guarantee TVA's bonds. In addition, TVA includes similar "no guarantee" language in its Basic TVA Power Bond Resolution, Information Statement, and bond offering circulars. However, because TVA is a wholly owned government corporation, there is the perception in the investment community, including two credit rating firms we contacted (Moody's Investors Service and Standard & Poor's), that the federal government would support principal and interest payments on TVA debt if TVA's solvency were to be seriously impaired. Because they believe that the federal government would intercede to protect TVA's solvency, the two credit rating firms we contacted perceive that there is an implicit government guarantee of TVA bonds.

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<sup>1</sup>*Tennessee Valley Authority: Debt Reduction Efforts and Potential Stranded Costs* (GAO-01-327, February 28, 2001).

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According to bond analysts at the two credit rating firms, this perceived implicit guarantee is one of the primary reasons that TVA's bonds have received the highest possible bond rating. One of the firms cited two additional factors—TVA's legislative protections from competition and its strong operational performance—as part of the basis for assigning TVA's bonds their Aaa rating. Of the 119 electric utilities rated by one of the firms as of October 2000, TVA was the only utility rated Aaa. The high bond ratings result in lower interest expense for TVA, which in turn reduces its fixed annual operating expense. According to our analysis, as a result of its high bond ratings, the annual interest expense on TVA's bonds outstanding at September 30, 2000, would have been between \$137 million and \$245 million higher (about 2 to 4 percent of fiscal year 2000 total expenses) if TVA's bond ratings were lower. Although high bond ratings provide TVA with more financial flexibility to adjust its rates in a competitive environment, our recently issued report indicates that because of the magnitude of its debt, TVA continues to have higher fixed financing costs and less financial flexibility than its likely competitors.

TVA's Chief Financial Officer generally agreed with the report and provided oral technical and clarifying comments, which we incorporated as appropriate.

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## Background

TVA is a multipurpose, independent, wholly owned federal corporation established by the Tennessee Valley Authority Act of 1933 (TVA Act). The TVA Act established TVA to improve the quality of life in the Tennessee River Valley by improving navigation, promoting regional agricultural and economic development, and controlling the floodwaters of the Tennessee River. To those ends, TVA erected dams and hydroelectric power facilities on the Tennessee River and its tributaries.

To meet the need for more electric power during World War II, TVA expanded beyond hydropower, building coal-fired power plants. In the 1960s, TVA decided to add nuclear generating units to its power system. Today, TVA operates one of the nation's largest power systems, having produced about 152 billion kilowatt-hours (kWh) of electricity in fiscal year 2000. The system consists primarily of 113 hydroelectric units, 59 coal-fired units, and 5 operating nuclear units. TVA sells power in seven states—Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia.

TVA sells power at wholesale rates to 158 municipal and cooperative utilities that, in turn, distribute the power on a retail basis to nearly

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8 million people in an 80,000 square mile region. TVA also sells power to a number of directly served large industrial customers and federal agencies.

In 1959, the Congress amended the TVA Act to authorize TVA to use debt financing to pay for capital improvements for power programs. Under this legislation, the Congress required that TVA's power program be "self-financing" through revenues from electricity sales. For capital needs in excess of internally generated funds, TVA was authorized to borrow by issuing bonds. TVA's debt limit is set by the Congress and was initially established at \$750 million in 1959. Since then, TVA's debt limit has been increased four times by the Congress: to \$1.75 billion in 1966, \$5 billion in 1970, \$15 billion in 1975, and \$30 billion in 1979. As of September 30, 2000, TVA's outstanding debt was \$26.0 billion.

TVA's bonds are considered "government securities" for purposes of the Securities and Exchange Act of 1934 and are exempt from registration under the Securities Act of 1933. All of TVA's bonds are publicly held, and several are traded on the bond market of the New York Stock Exchange. Since TVA's first public issue in 1960,<sup>2</sup> Moody's Investors Service and Standard & Poor's have assigned TVA's bonds their highest credit rating—Aaa/AAA.<sup>3</sup>

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## Objectives, Scope, and Methodology

To determine whether TVA's bonds are explicitly or implicitly guaranteed by the federal government, we analyzed various documents, including Section 15d of the TVA Act, as amended, the Basic TVA Power Bond Resolution, TVA's Information Statement,<sup>4</sup> and the language included in TVA's bond offering circulars. We also discussed this issue with bond analysts at two credit rating firms (Moody's Investors Service and Standard & Poor's) and TVA officials.

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<sup>2</sup>During the period 1974–1988, TVA borrowed exclusively from the Federal Financing Bank (FFB). The FFB debt was not rated. However, during this period, the outstanding public debt from the 1960–1974 issues continued to be rated Aaa/AAA.

<sup>3</sup>Aaa is the highest rating given to bonds by Moody's; it corresponds to the AAA rating issued by Standard & Poor's.

<sup>4</sup>The Information Statement is included with the bond-offering circular. It provides information on the business, operations, and financial condition of TVA.

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To determine the opinion of bond analysts regarding the effect of an implicit or explicit guarantee on TVA's bonds, we interviewed officials at two credit rating firms that rate TVA's bonds to discuss their rating methodology for TVA and other electric utilities' bonds. In addition, we reviewed recent reports issued by the credit rating agencies for any language about an implicit federal guarantee of TVA's debt. As agreed with your offices, we did not attempt to determine what TVA's bond rating would be without its ties to the federal government as a wholly owned government corporation.

To determine the impact of TVA's bond rating on its annual interest expense, we obtained information from TVA about its outstanding bonds as of September 30, 2000. We then obtained comparable information on the average bond ratings and bond yield rates applicable to public utilities for the various bond rating categories. Using the average bond yield rates for public utility debt in the various bond rating categories, we used two approaches to estimate the amount of TVA's annual interest expense if its bonds outstanding at September 30, 2000, carried the lower ratings. Additional information on our scope and methodology is contained in appendix I.

We conducted our review from July 2000 through April 2001 in accordance with generally accepted government auditing standards. We requested written comments from TVA on a draft of this report. TVA's Chief Financial Officer provided us with oral comments, which we incorporated, as appropriate.

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## The Federal Government Does Not Guarantee TVA's Bonds but Is Perceived to Implicitly Back Them

The TVA Act states that the federal government does not guarantee the principal of, or interest on, TVA's bonds. However, the perception of the bond analysts at the two credit rating firms we contacted is that since TVA is a wholly owned government corporation, the federal government would support debt service and would not allow a default to occur. Both of the credit rating firms stated that this perception of an implicit federal guarantee is one of the primary reasons that TVA's bonds have received the highest credit rating. One of the firms cited two other factors—TVA's legislative protections from competition and its strong operational performance—as additional reasons for assigning TVA's bonds its highest rating.

The TVA Act specifically states that the federal government does not guarantee TVA bonds. TVA includes similar "no federal guarantee"

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language in its Basic TVA Power Bond Resolution, Information Statement, and bond offering circulars. The relevant language is as follows:

- **Section 15d of the TVA Act, as amended, 16 USC § 831n-4**—“Bonds issued by the Corporation [TVA] hereunder shall not be obligations of, nor shall payment of the principal thereof or interest thereon be guaranteed by, the United States.”
- **Basic TVA Power Bond Resolution, Section 2.2 *Authorization and Issuance of Bonds***—“They [the TVA bonds] shall be payable as to both principal and interest solely from Net Power Proceeds and shall not be obligations of or guaranteed by the United States of America.”
- **Information Statement**—“Evidences of Indebtedness are not obligations of the United States of America, and the United States of America does not guarantee the payment of the principal of or interest on any Evidences of Indebtedness.”
- **TVA bond offering circulars**—“The interest and principal on the Bonds are payable solely from Net Power Proceeds and are not obligations of, or guaranteed by, the United States of America.”

Although TVA’s bonds expressly disclaim a federal guarantee, the two bond rating firms we contacted perceive TVA’s bonds to be implicitly backed by the federal government. This perception of an implied federal guarantee is one of the primary reasons that TVA’s bonds have received the highest credit rating. For example, Standard & Poor’s, in its January 2001 analysis of TVA’s global power bonds, stated that “the rating reflects the US government’s implicit support of TVA and Standard & Poor’s view that, without a binding legal obligation, the federal government will support principal and interest payments on certain debt issued by entities created by Congress.”<sup>5</sup>

Further, in its June 2000 opinion update on TVA, Moody’s Investors Service (Moody’s) reported that “the Aaa rating on Tennessee Valley Authority (TVA) power bonds derives from its strong operational performance and its status as a wholly owned corporate agency of the US Government.” In addition, Moody’s reported that although the federal government does not guarantee TVA’s bonds, the government would not allow a default on TVA’s debt because of the impact it would have on the cost of debt issued by government-sponsored enterprises, such as Fannie

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<sup>5</sup> *Tennessee Valley Authority \$1B Global Power Bonds Rated ‘AAA,’* Standard & Poor’s CreditWire, January 11, 2001.

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Mae and Freddie Mac.<sup>6,7</sup> As in the case of TVA, the government does not guarantee the debt of these enterprises. Also as with TVA, there is a perception in the investment community that the federal government would not allow these enterprises to default on their obligations.

In its January 2001 analysis of TVA's global power bonds, Standard & Poor's acknowledged that its rating of these bonds did not reflect TVA's underlying business or financial condition and that the rating of these bonds would have been lower without TVA's ties to the federal government. In addition, a Moody's official stated that financial statistics and ratios for other electric utilities are significantly stronger than those for TVA in each rating category and that government ownership was a fundamental underpinning of the Aaa rating it assigned to TVA's debt.

Moody's and Standard & Poor's generally use a complex methodology involving both quantitative and qualitative analyses when determining ratings for electric utilities. For example, Moody's examines the volatility and reliability of cash flows, the contributions of the utility to the profits of its corporate parent (if any), and how the utility is positioning itself to operate in a competitive environment. Also included in Moody's analysis is the utility's ability to balance business and financial risk with performance. Similarly, Standard & Poor's measures financial strength by a utility's ability to generate consistent cash flow to service its debt, finance its operations, and fund its investments. In addition, Standard & Poor's analyzes business risk by examining the utility's operating characteristics such as regulatory environment, reliability, and management.

In summarizing the results of the analyses, the bond analysts assign a credit rating to the electric utility (issuer rating) representing their opinion on the general creditworthiness of the utility. In addition, bond analysts may also assign a rating to an individual debt issue (issue-specific rating) representing their opinion on the general creditworthiness of the utility with respect to the specific debt issue. Further, specific debt issues of the issuer may be rated differently. Moody's and Standard & Poor's use their same rating symbols to indicate credit quality of the issuer and the investment quality of the debt issue. Both maintain similar rating

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<sup>6</sup> *Opinion Update: Tennessee Valley Authority*, Moody's Investors Service, June 22, 2000.

<sup>7</sup> Government-sponsored enterprises are federally established, privately owned corporations designed to increase the flow of credit to specific economic sectors.

categories, using A, B, and C, with Aaa/AAA being the highest rating. Triple, double, and single characters distinguish the gradations of credit/investment quality.<sup>8</sup> For example, issuers rated Aaa/AAA indicate exceptional financial security, Baa/BBB indicate adequate financial security, and Ba/BB or below offer questionable to poor financial security. Debt issues rated in the four highest categories, Aaa/AAA, Aa/AA, A, and Baa/BBB, generally are recognized as investment-grade. Table 1 describes the investment-grade rating categories used by Moody’s and Standard & Poor’s. Debt rated Ba/BB or below generally is referred to as speculative grade.

**Table 1: Description of Investment-Grade Bond Rating Categories**

<b>Moody’s Investors Service/Standard &amp; Poor’s Investment-Grade Rating Categories</b>			
<b>Aaa/AAA</b>	<b>Aa/AA</b>	<b>A</b>	<b>Baa/BBB</b>
Highest rating category—smallest degree of investment risk. Ability to pay interest and principal is extremely strong.	Together with the highest rating, this group composes the high-grade bonds. Long-term risk appears somewhat greater than in the highest rated securities. Ability to pay interest and principal is very strong.	Upper-medium-grade obligations—elements may be present that suggest a susceptibility to impairment sometime in the future. However, ability to pay interest and principal is still strong.	Medium-grade obligations—the ability to pay interest and principal appears adequate for the present but certain protective elements may be lacking or may be characteristically unreliable over any great length of time.

Source: Based on information from Moody’s Investors Service website, [www.moodys.com](http://www.moodys.com), and *Standard & Poor’s 2000 Corporate Ratings Criteria*.

In addition, Moody’s applies numerical modifiers, 1, 2, and 3, and Standard & Poor’s uses “plus” and “minus” signs in each rating category from Aa/AA through Caa/CCC in their corporate bond rating system. The modifier 1 and “plus” indicate that the issuer/obligation ranks in the higher end of a rating category; 3 and “minus” indicates a ranking in the lower end.

According to a Moody’s official, the firm places less significance on financial factors in analyzing TVA debt than in analyzing the debt of other electric utilities.<sup>9</sup> Because of TVA’s ties to the federal government, Moody’s

<sup>8</sup>In their rating system, Moody’s uses lowercase “a” as its second and third character (e.g., Baa); Standard and Poor’s uses uppercase of the same character (e.g., BBB).

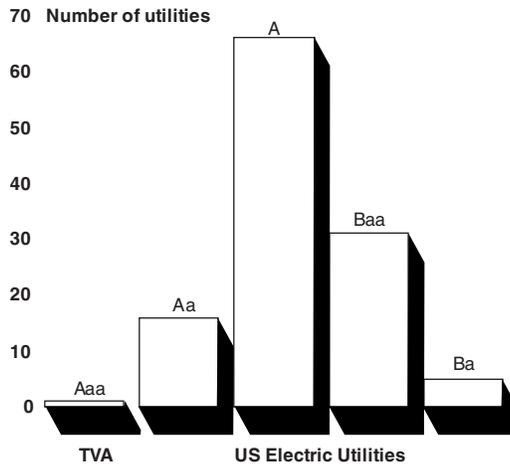
<sup>9</sup>The previously mentioned January 2001 Standard & Poor’s analysis of TVA also de-emphasized TVA’s underlying financial condition in determining its bond rating.

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considers other factors more important in its assessment of TVA. Specifically, Moody's looks at how TVA will react to its changing operating environment and places "considerable value" on the legislative framework in which TVA operates. For example, in its June 2000 analysis of TVA, Moody's reported that key provisions in the TVA Act and the Energy Policy Act of 1992 (EPAct) provide credit protection for bondholders. Under the TVA Act, TVA's Board of Directors is required to set rates at levels sufficient to generate revenues to cover operating and financing costs. EPAct provides TVA with certain protections from competition. Under EPAct, TVA is exempt from having to allow other utilities to use its transmission lines to transmit power to customers within TVA's service territory. Further, the Moody's official stated, as long as TVA is able to set its own rates and to benefit from legislative and other competitive advantages over other utilities, Moody's will continue to assign TVA's bonds a Aaa rating.

As shown in figure 1, of the 119 electric utilities rated by Moody's as of October 2000, TVA was the only utility rated Aaa. The ratings of other electric utilities range from a high of Aa1 to a low of Ba2, with an average rating at A3. Figure 1 shows the number of utilities in each rating category compared to TVA.

**Figure 1: TVA and Other U.S. Electric Utilities Rated by Moody's by Rating Category as of October 2000**

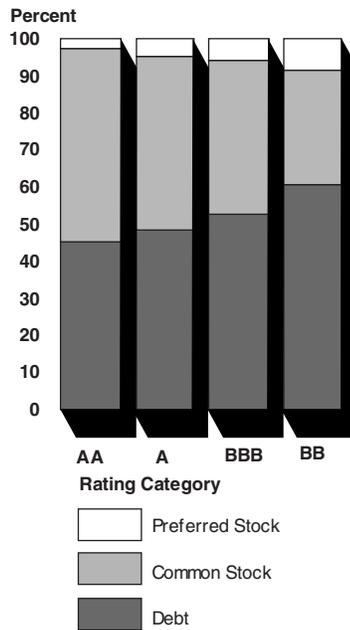


Source: Based on information from *Moody's Electric Utilities Industry Outlook*, October 2000.

As noted previously, the TVA Act authorizes TVA to issue and sell bonds to assist in financing its power program. Investor-owned electric utilities also use debt financing, but unlike TVA, they can and do issue common and preferred stock to finance capital needs.<sup>10</sup> Figure 2 shows the capital structure of electric utilities by rating category. It also shows that, in general, electric utilities that have obtained a greater portion of financing through debt have lower credit ratings. However, even though the capital structure of TVA consists entirely of debt, and, as illustrated in our February 2001 report, it has higher fixed financing costs and less financial flexibility than its likely competitors, TVA remains the only AAA-rated electric utility in the United States.

<sup>10</sup>TVA and other electric utilities can also finance capital improvements through cash generated from operations.

**Figure 2: Capital Structure of Electric Utility Companies Rated by Standard & Poor's by Rating Category**



Source: GAO analysis based on data from *Standard and Poor's Corporate Ratings Criteria, 2000*. Data for electric utility companies is for the 12 months ended June 30, 1999.

## TVA's High Bond Ratings Result in Lower Interest Expense

As a result of TVA's high bond ratings, the private lending market has provided TVA with access to billions of dollars of financing at low interest rates, an advantage that in turn results in lower interest expense than if its rating had been lower.

To determine the impact of TVA's bond rating on its interest expense, we estimated what TVA's annual interest expense on its bonds outstanding at September 30, 2000, would have been if the debt had been given lower investment-grade ratings. Using two different methodologies, we obtained similar results. In the first methodology, we compared the coupon rate of each of TVA's bonds outstanding at September 30, 2000, to the average bond yield rates applicable to public utility bonds with similar terms at the time of issuance for each investment-grade rating category. For example, TVA's Aaa-rated 2000 Series E Power Bonds that were outstanding at September 30, 2000, have a coupon rate of 7.75 percent. When these bonds

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were issued on February 16, 2000,<sup>11</sup> the average bond yields for public utility debt averaged 8.16 percent. In total, using the first methodology, we found that the annual interest expense of TVA's bonds outstanding at September 30, 2000, would have been between \$137 million and \$235 million (about 2 to 3 percent of fiscal year 2000 total expenses) higher if the debt had been given lower investment-grade bond ratings.

In the second methodology, we categorized TVA's bonds into long-term (at least 20 years to maturity at time of issuance) and intermediate-term (less than 20 years to maturity at time of issuance) debt issues. We then identified the difference between TVA's average coupon interest rates grouped as long-term and intermediate-term on its bonds outstanding at September 30, 2000, and the average bond yield rates grouped as long-term and intermediate-term for public utilities for the various investment-grade rating categories. Specifically, we compared the average coupon interest rate on TVA's long-term bonds to the 9-year (1992–2000) average bond yield rates for long-term public utility bonds. Similarly, we compared the average coupon interest rate on TVA's intermediate-term bonds to the 5-year (1996–2000) average bond yield rates for intermediate-term public utility bonds. The years used (maturities and time of issuance) for public utility long-term and intermediate-term debt are, in general, comparable to TVA's bonds outstanding at September 30, 2000. For example, the average coupon interest rate for TVA's bonds outstanding at September 30, 2000, with at least 20 years to maturity at time of issuance was 6.96 percent. In comparison, the average bond yield rates for the period 1992–2000 for public utility debt with at least 20 years to maturity averaged 7.82 percent. Using this methodology, we estimated that the annual interest expense on TVA's bonds outstanding at September 30, 2000, would have been about \$141 million to \$245 million (about 2 to 4 percent of fiscal year 2000 total expenses) higher if its bonds had been rated lower.<sup>12</sup>

Table 2 shows the impact of lower bond ratings on annual interest expense using both methodologies. It is important to note that our analyses assumed that TVA's coupon rates on its bonds corresponded to

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<sup>11</sup>February 16, 2000, is the bond offering circular date, which is the day the bonds were priced. The issuance date is typically 3 to 5 business days after pricing.

<sup>12</sup>We also obtained and analyzed an analysis of the impact of TVA's high bond rating on its annual interest expense that was done by the Department of Energy's Energy Information Administration (EIA). The results of EIA's analysis showed that TVA's interest expense would have been from \$77 million to \$248 million higher if its bonds were rated similarly to other utilities.

the bond yield rates of other lower-rated public utilities at the time TVA issued its bonds. Assuming that were the case, we estimated that TVA's interest expense would have been higher by the amounts shown in table 2. If TVA's debt were no longer perceived to be implicitly guaranteed by the federal government, the resulting impact on TVA's interest expense would relate to future bonds and refinancings rather than to its bonds outstanding at September 30, 2000.

**Table 2: Impact of Lower Bond Ratings on TVA's Annual Interest Expense on TVA's Bonds Outstanding at September 30, 2000**

(Dollars in millions)

Investment-grade Rating category	Additional annual interest expense using	
	Methodology 1	Methodology 2
Aa/AA	\$137	\$ 141
A	\$167	\$ 174
Baa/BBB	\$235	\$ 245

Source: GAO analysis based on TVA coupon interest rates and public utility bond yield data.

TVA's high bond rating results in lower interest expense, enhancing TVA's competitive prospects by providing it with more financial flexibility to respond to financial or competitive challenges.

## Conclusion

While the criteria used to rate the bonds of TVA and other electric utilities are the same, they are weighted differently and, as a result, the basis for TVA's bond rating is more nonfinancial in nature than that for other electric utilities. According to bond analysts, TVA's high bond rating is largely based on the perception that its debt is federally backed because of its ties to the federal government as a wholly owned government corporation and its legislative protections from competition. If these conditions were to change, TVA's bond rating would likely be lowered, which in turn would affect the cost of new debt. This would add to its already high interest expense and corresponding financial challenges in a competitive market.

## Agency Comments and Our Evaluation

TVA's Chief Financial Officer generally agreed with the report and provided oral technical and clarifying comments, which we incorporated as appropriate.

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As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days from its date. At that time, we will send copies of this report to appropriate House and Senate Committees; interested Members of Congress; TVA's Board of Directors; The Honorable Spencer Abraham, Secretary of Energy; The Honorable Mitchell E. Daniels, Jr., Director, Office of Management and Budget; and other interested parties. The report will also be on GAO's home page at <http://www.gao.gov>. We will make copies available to others upon request.

Please call me at (202) 512-9508 if you or your staffs have any questions. Major contributors to this report are listed in appendix II.



Linda M. Calbom  
Director  
Financial Management and Assurance

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# Appendix I: Objectives, Scope, and Methodology

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We were asked to answer specific questions regarding TVA's financial condition. This report addresses the questions pertaining to TVA's bond rating; specifically, (1) whether TVA's bonds are explicitly or implicitly guaranteed by the federal government, including the opinion of bond analysts regarding the effect of any such guarantee, and (2) the impact of TVA's bond rating on its annual interest expense. As agreed with your offices, we issued a separate report on February 28, 2001, on the three other issues regarding TVA's (1) debt and deferred assets, (2) financial condition compared to its likely competitors, and (3) potential stranded costs.

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## Determining Whether the Federal Government Guarantees TVA's Bonds

To determine whether TVA's bonds are explicitly or implicitly guaranteed by the federal government, we

- reviewed prior GAO products discussing TVA's bonds;
- reviewed and analyzed the section of the TVA Act pertaining to TVA's bonds;
- reviewed and analyzed various TVA documents, including the Basic TVA Power Bond Resolution, TVA's Information Statement, and the language included in TVA's outstanding bond offerings at September 30, 2000;
- interviewed bond analysts at Moody's and Standard & Poor's; and
- interviewed TVA officials.

To determine the opinion of bond analysts regarding the effect of any such guarantee, we

- interviewed officials at the credit rating firms that rate TVA's bonds—Moody's and Standard & Poor's; and
- reviewed and analyzed documents issued by Moody's and Standard & Poor's on their methodology for rating TVA and other electric utilities.

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## Determining the Impact of TVA's Bond Rating on Its Interest Expense

To determine the impact of TVA's bond rating on its annual interest expense, we

- obtained information from TVA about its outstanding bonds at September 30, 2000;
- reconciled information from TVA about its outstanding bonds at September 30, 2000, to its audited financial statements;
- reviewed information pertaining to TVA's outstanding debt contained in its annual reports;

- reviewed a report issued by the Department of Energy's Energy Information Administration which assessed the impact of TVA's bond rating on its interest expense;
- interviewed Moody's regarding the availability of historical bond yield data by rating category for electric utilities and public utilities;
- obtained Moody's information on the average bond yields applicable to public utilities in the various bond rating categories from Standard & Poor's DRI (long-term) and Moody's Investors Service Credit Perspectives (intermediate-term); and
- estimated the additional annual interest expense on TVA's bonds outstanding at September 30, 2000, using the average bond yield rates for public utilities in various investment-grade rating categories.

Using Moody's public utility long-term and intermediate-term (unweighted) bond yield data in various investment-grade rating categories, we applied two methods for estimating what the additional annual interest expense on TVA's bonds outstanding at September 30, 2000, would have been if TVA's debt were rated lower. Our analysis considered the characteristics of TVA's bonds, such as date of issuance and term; however, we did not assess the effect of call provisions.<sup>1</sup>

Under Methodology 1, we

- analyzed TVA's annual interest expense on its bonds outstanding at September 30, 2000, to determine, for each issuance outstanding, the (1) coupon rate, (2) date of issuance, (3) term, and (4) maturity;
- identified the average bond yield rates applicable to public utility bonds with similar terms at the time of issuance of each of TVA's bonds outstanding at September 30, 2000, in the Aa/AA, A, and Baa/BBB rating categories;
- calculated the annual interest expense for each of TVA's debt issues in the various rating categories; and
- determined the estimated additional annual interest expense by taking the difference between TVA's annual interest expense and the interest expense in the various rating categories.

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<sup>1</sup>A call provision is a written agreement between an issuer and its bondholders that gives the issuer the option of redeeming the bond at a specified price before the maturity date.

Under Methodology 2, we

- categorized TVA's bonds into long-term (at least 20 years to maturity at time of issuance) and intermediate-term (less than 20 years to maturity at time of issuance);
- calculated TVA's (unweighted) average coupon interest rates for long-term and intermediate-term debt by taking the average of the coupon rates applicable for each category (long-term and intermediate-term) of TVA's bonds outstanding at September 30, 2000;
- calculated the annual interest expense for TVA's long-term and intermediate-term debt using the average coupon interest rates calculated for each category;
- determined the (unweighted) average public utility bond yield rates for calendar years 1992 to 2000 in each of the various rating categories for long-term debt and 1996 to 2000 for intermediate-term debt, which, in general, are comparable to the maturities and time of issuance of TVA's bonds outstanding at September 30, 2000;
- calculated the annual interest expense for TVA's long-term and intermediate-term debt using the average public utility bond yield rates applicable to the various rating categories; and
- determined the estimated additional annual interest expense (long-term and intermediate-term) by taking the difference between TVA's annual interest expense and the interest expense in the various rating categories.

We conducted our review from July 2000 through April 2001 in accordance with generally accepted government auditing standards. We obtained our information on public utility bond yield rates from authoritative sources (e.g., Standard & Poor's DRI, Moody's Investors Service) that provide and/or regularly use that data; however, we did not verify the accuracy of the bond yield data they provided.

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## Organizations Contacted

During the course of our work, we contacted the following organizations.

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### Federal Agencies

- Tennessee Valley Authority
- Department of Energy's Energy Information Administration

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**Bond Rating Firms**

- Moody's Investors Service, New York, New York
- Standard & Poor's, New York, New York

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**Others**

- Standard & Poor's DRI, Washington, D.C.
- Standard & Poor's DRI, Lexington, Massachusetts

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# Appendix II: GAO Contact and Staff Acknowledgments

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## GAO Contact

Robert E. Martin, (202) 512-4063

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## Staff Acknowledgments

In addition to the individual named above, Richard Cambosos, Philip Farah, Jeff Jacobson, Joseph D. Kile, Mary B. Merrill, Donald R. Neff, Patricia B. Petersen, and Maria Zacharias made key contributions to this report.

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